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ABSTRACT

Examinations of 50 general science writing course syllabi used at 32 schools (55% response rate to a survey of 58 colleges and universities listing science writing courses in their curricula) reveal a wide range of course objectives and a varied use of resource materials. The emphasis is necessarily on writing skills, although a number of the instructors acknowledge emphasizing the sociological, philosophical, and political aspects of science as well. The extreme variety of required and recommended books for the courses implies either a wealth of pertinent material or a lack of books designed specifically for science writing instruction (the most popular required text has a science writing focus, but is required by only six of the polled instructors). The surveyed syllabi indicate a minimal use of available science communication research, even though most of that research is soundly done and has some substantive things to say regarding writing about science for lay audiences. (Lists of recommended and required reading materials for the surveyed courses are appended.) (RL)

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A Survey of the Structure of Science Writing Courses

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With the publication of the Directory of Science Communication Courses and Programs,[2] educators can now identify those science writing courses being taught at institutions other than their own. This study is designed to supplement the directory by inventorying the content of some of the courses listed in it. The primary intent is to examine the types of resource materials utilized in the courses and to describe the number and nature of major writing assignments required by the various science writing instructors.

In March 1978 a letter was sent to all 58 colleges and universities in the directory who had listed science writing courses that included structured class sessions (this excluded internships). Collectively, these schools offered approximately 104 science writing courses of all types. The letter asked instructors to send course syllabi as well as additional information about course structure. A followup letter was mailed in May.

Responses were received from 32 institutions (55%) providing data[3] on 50 courses in various science communication specialties.

The following analysis has been broken down by specialty writing area to make comparisons between courses possible. The major emphasis of the paper is on general science writing courses. Also discussed are technical, agricultural and environmental writing courses. A few course syllabi received seemed to fall into none of these categories so will be discussed separately.

General science writing courses. Half of the course syllabi received (25) clearly dealt with science writing as a general specialty, with occasional forays into environmental or technical writing. Twenty of the courses are offered by journalism or communication departments (see Table 1), and three are offered by science departments, two of these in conjunction with rhetoric or journalism departments. One is affiliated with an English department and one with a special "writing program."

The primary course objective for nearly all courses was to teach students to interpret scientific information for lay audiences. From that point on, however, there was considerably less consensus among instructors in the objectives listed in the various syllabi. Following is a list of the most popular stated objectives, ordered by number of mentions in the 25 syllabi:

Writing about science for lay audiences (23 mentions)

Learning technical writing skills (7)

History and philosophy of science (6)

Sociological/ethical aspects of science (6)

What's news worthy about science? (6)

Role of mass media in the relationship between science and society (5)

The relationship between science writer and scientist (5)

The nitty-gritty of science writing: writing and editing techniques, use of graphics, etc. (5)

Political/public policy aspects of science (4)

Other objectives mentioned by less than four instructors included investigating who reads about science, identifying information sources in science, identifying markets for science articles, discussing examples of mass media science writing, and analyzing the sociological aspects of science journalists. One course emphasizes science in films, another adds material on computer applications in science, and a third gives substantial time to science writing careers. Public conceptions of science are investigated by one and two instructors indicated they spend a good deal of time on editorial writing about scientific topics.

The most impressive thing about the resource material recommended in the 25 syllabi was its staggering variety. Some instructors included lengthy bibliographies along with required textbooks. Others took the time to cull relevant magazine articles from scientific periodicals, and some of these were specially bound into anthologies for individual courses.

Table 1

General Science Writing Courses, Universities and Instructors

School/department	Course title	Instructor
U. of Calif./Berkeley Dept. of Journalism	Reporting on Science and the Environment	James Spaulding
Calif. State/Hayward Sch. of Journalism	Science/Environmental Journalism	Larry Wood
U. of Colo./Boulder Depts. of Journalism & Physics	Seminar in Science Writing	Joann Temple Dennett
Humboldt State U. Journalism Dept.	Scientific News Writing	Alann Steen
U. of Kansas Sch. of Journalism	Science Writing for the Media	Rex Buchanan
Kent State U. Dept. of Physics	Physics for Journalism	Stan H. Christensen
U. of Kentucky Sch. of Journalism	Science and Medical Writing	Warren Burkett
Lehigh U. Div. of Journalism	Science Writing	Sharon M. Friedman
U. of Maryland College of Journalism	Journalism for Science & Technology	James Grunig
U. Of Maryland College of Journalism	Science Communication	James Grunig
MIT Writing Program	Science Writing	Rae Goodell
U. of Minn. Sch. of Journalism and Mass Comm.	Specialized Reporting: Social, Physical Sciences	Phil Tichenor
U. of Minn. Sch. of Journalism and Mass Comm.	Interpretation of Science and Technology	Phil Tichenor
U. of Missouri Sch. of Journalism	Science Writing	Joye Patterson

Table 1 continued

School/department	Course title	Instructor
New York U. Dept. of Journalism	Science Writing	Edward Edelson
State U. of NY at Binghamtom Depts. of Chemistry and Rhetoric	Science Reporting in the Mass Media	Lawrence Verbit
N.D. State U. Dept. of Comm.	Technical Journalism	Lou Richardson
Northwestern U. Sch. of Journalism	Science and Technology Seminar	Benjamin H. Baldwin
Northwestern U. Sch. of Journalism	Reporting Public Affairs (Science and Technology	Benjamin H. Baldwin
Ohio State U. Sch. of Journalism	Mass Media Science Writing	Sharon Dunwoody
Purdue U. Dept. of Comm.	Science Writing	L.E. Trachtman David Nelson
St. Olaf College Dept. of English	Science Writing	Lynn A. Steen Mary E. Steen
Suffolk University Journalism Dept.	Introduction to Science Comm.	James Cornell
Suffolk University Journalism Dept.	Science Comm. in Modern Society	James Cornell
U. of Washington Sch. of Comm.	Science Reporting	Keith R. Stamm

n=25

Appendix A lists books that were either required or recommended by instructors of the 25 courses. The most popular required textbook was Warren Burkett's Writing Science News for the Mass Media, although even that book was required by only six of the instructors. The three other most popular required books were William Strunk and E.B. White's The Elements of Style (5 mentions), Hillier Krieghbaum's Science and the Mass Media (3 mentions) and James Watson's The Double Helix (3 mentions). All other 29 publications were mentioned, at most, twice. Six courses had no required texts.

The diversity of recommended volumes is just as great, although 15 of the 23 instructors (65%) listed no specific recommended reading in their syllabi. Mentioned by more than one instructor were Krieghbaum (5 mentions), Burkett (4 mentions), Dan Greenberg's The Politics of Pure Science (3 mentions) and A. Hunter Dupree's Science in the Federal Government (2 mentions).

Eleven of the 23 syllabi indicated no required magazine readings, but of those who did, they were most likely to assign readings from Science (5 mentions), followed by Science News (4 mentions), Columbia Journalism Review (3 mentions) and Science and Government Report (3 mentions). Appendix B lists all the magazines from which required readings were taken.

Although research in the area of science communication is relatively sparse, it does exist and journal articles have been published that deal with readability and accuracy of science news stories, backgrounds of working science writers

and public attitudes toward science. Of the instructors in this survey, only three required specific journal readings in their syllabi, and journal assignments were mentioned generally in only another four. Appendix C lists the journal articles mentioned in these syllabi.

The average instructor, as best it could be determined from the syllabi, required 6.4 writing assignments of various kinds from his or her students. The number of written assignments ranged from a low of one to a high of 14 for a single course. Of the 7 courses for which a specific number could not be determined, three required weekly writing assignments.

The nature of these assignments was difficult to discern from the syllabi, since no two instructors listed writing assignments in the same way. Of those that could be classified, the most popular are listed as follows:

Stories based on interviews with scientists (7 mentions)
Stories based on scientific lectures or speeches (6)
Stories based on journal articles (5)
Book reviews (5)
Stories about research findings (4)
Critiques of media coverage of science (3)
Various types of technical writing assignments (3)
Unspecified class projects (3)

Other writing assignments mentioned by one or two instructors included stories about controversial scientific issues, a report on a methodological development in science, coverage

of a scientific meeting, critique of a scientific film, editorials and columns, stories on survey research findings, and the compilation of an annotated science-writing reading list.

Other kinds of assignments included rewriting other students' stories, writing essays on scientific topics and making oral reports on scientific subjects.

Team projects generally were not explained. In at least one instance, however, students conducted their own research by surveying local scientists to determine the amount and kind of contact the scientists had had with journalists as well as their attitudes toward such contact. Another instructor explained that he found tailoring a number of assignments around a single scientific event to be successful. One year his class built writing assignments around the Multiple Mirror Telescope being completed in southern Arizona; since public relation activities regarding the MMT were getting underway, the students could compare their work with those of professionals.

In most cases, it appears that students write for the instructors, with few instances of planned publication of work. In at least one course the instructor gives extra credit when a student finds a publisher for a story. Stories from a couple courses are sent to the school newspapers. And in one class students write, edit and lay out a 10,000-circulation science newsletter focusing on scientific developments at the university.

Technical Writing Courses. Course syllabi were received from nine different schools offering 13 courses in technical writing. Four humanities departments, three journalism departments, one department of English and one technical journalism department are represented in this sample (see Table 2). With one exception, each course is designed to teach students to effectively communicate technical material to fellow scientists and technical experts. The one exception, a course on Business Communications offered through the Department of Humanities at Michigan Technological University, focuses on preparation of both written and oral reports for business and on sociological aspects of large-scale organizations.

Twenty different textbooks are listed in the bibliographies for these courses. Only two courses, both of which are advanced technical writing courses, do not require a text. The average number of books required is two per course. On the other hand, only one course requires any magazine or journal articles; this is the Business Communications course mentioned above.

Four textbooks are required by two different instructors across schools. Three of these focus on technical writing: J.C. Mathes and D. Stevenson, Designing Technical Reports: Writing for Audiences (NY: Bobbs-Merrill, 1976); Houp and Pearsall, Reporting Technical Information (NY: Glencoe Press, 1977); and Menzel, Jones and Boyd, Writing a Technical Paper (NY: McGraw-Hill, 1961). Two general writing handbooks

Table 2

Technical Writing Courses, Universities and Instructors

School/department	Course title	Instructor
Bowling Green State U./English	Technical Writing	Martha Eckman
Clarkson College of Technology/Humanities	Technical Writing for Science, Government, Engineering and Industry	(Not indicated)
Colorado State U. Technical Journalism	Basic Technical Communication	D. McGuire D. Zimmerman
Colorado State U. Technical Journalism	Writing for Specialized Audiences	D. Eynon
Drexel U. Humanities	Technical Writing	Deborah C. Andrews
Humboldt State U. Journalism	Technical Writing	M.A. Larson A. Steen
Michigan Tech U. Humanities	Business Communication	(Not indicated)
Michigan Tech U. Humanities	Technical and Scientific Writing	Philip Rubens
U. of Michigan College of Engineering, Dept. of Humanities	Technical and Professional Writing for Industry, Government and Business	Dwight W. Stevenson
U. of Michigan College of Engineering, Dept. of Humanities	Technical Writing	Thomas M. Sawyer
Oregon State U. Journalism	Contemporary Technical Journalism	Ron Lovell
Suffolk U. Journalism	Technical Communication: Principles and Procedures	James Cornell
Suffolk U. Journalism	Introduction to Technical Communications	James Cornell

n=13

are also required by two different courses: Strunk and White, The Elements of Style (NY: MacMillan, 1976) and Zinsser, On Writing Well (New York: Harper and Row, 1976).

As might be expected, the most frequently mentioned major writing assignment in the technical writing courses is a research paper and final report, assigned in eight of the 13 courses. This assignment is typically broken into two or three parts, including a research proposal, final report and oral presentations. Research topics are typically designed to fit the students' technical areas of expertise.

In addition to the research paper assignments, four instructors assign a newspaper or journal article, and three assign small description papers such as a paper describing a technical instrument or methodology. Other writing assignments include preparation of job letters and resumes (four courses), oral reports of research results (6 courses) and annotated bibliographies (3 courses). Thus, the emphasis in the technical writing courses is on preparing students to clearly and effectively report scientific data to their peers and colleagues.

Environmental Journalism. Four course syllabi fell into the category of environmental journalism. As Table 3 indicates, included here are two courses offered by Sharon Friedman at Lehigh University's Division of Journalism. In the course, "Environment, The Public and the Mass Media," emphasis is given to the development of public opinion about environmental issues by focusing on the tactics used in

environmental information campaigns, by evaluating public perceptions of environmental issues and by examining the roles of industry, government, mass media and environmental groups in forming public perceptions. The required text utilized in the course is David Rubin and David Sachs Mass Media and the Environment (NY: Praeger, 1973). Students are also required to read at least one science magazine (unspecified) each week. Five short writing assignments are listed, including a book analysis paper, a meeting analysis paper, and an investigative paper.

Table 3

Environmental Journalism Courses, Universities and Instructors

School/department	Course title	Instructor
Dartmouth College English	Environmental Journalism	Noel Perrin
Lehigh U. Journalism	Environment, The Public and the Mass Media	Sharon Friedman
Lehigh U. Journalism	Writing about the Environment	Sharon Friedman
Syracuse U. Newhouse School of Public Communication	The Reporting of Public Affairs, Focus: Energy	Cathy Covert

n=4

Friedman's "Writing About the Environment" introduces students to writing a variety of media reports about an environmental issue. The course heavily emphasizes multiple

media story preparation with six major assignments: preparation of a news release, broadcast announcement, article for a newsletter, a pamphlet, a slide presentation and rewriting a segment of an environmental impact statement. No journal or magazine articles are required and texts used appear to represent a public relations perspective such as S. Cutlip and A. Center's Effective Public Relations (Englewood Cliffs, N.J.: Prentice-Hall, 1971).

The Syracuse environmental writing course offered by Catherine Covert emphasizes public affairs reporting while focusing on environmental issues. In this class, the major text used is G. Hage, E. Dennis, A. Ishmach and S. Hartgen's Public Affairs Reporting (Englewood Cliffs, N.J.: Prentice-Hall, 1976). Students are required to prepare three in-depth stories on three different aspects of a local energy issue as well as become acquainted with government and citizen groups and organizations associated with energy.

Too little information was returned on the Dartmouth course in Environmental Journalism to report on it.

Agricultural Journalism Courses. Of the five courses represented in agricultural journalism, four of the courses are offered in the Department of Agricultural Journalism in the College of Agricultural and Life Sciences at the University of Wisconsin-Madison. These four courses are offered as part of a major in agricultural journalism through this department. Additionally, majors are offered in agricultural advertising, science writing and resource communication.

Table 4

Agricultural Journalism Courses, Universities and Instructors

School/department	Course title	Instructor
Kansas State U. Journalism and Mass Communication	Problems in Agricultural Publications	Lowell Brandner
U. of Wisconsin-Madison/ Agricultural Journ.	Advanced Agricultural Writing	Richard Powers Gene Kroupa
U. of Wisconsin-Madison/ Agricultural Journ.	Intro to Non-Theatrical Film	Fritz Albert
U. of Wisconsin-Madison/ Agricultural Journ.	Publications Editing	(Not indicated)
U. of Wisconsin-Madison/ Agricultural Journ.	Technical Writing	(Not indicated)

n=5

The goals of the three print oriented Wisconsin courses include preparation of articles and manuscripts for agricultural journals and industries. Texts required for the "Advanced Agricultural Writing" course include such general writing handbooks as W. Zinsser, On Writing Well, (New York: Harper & Row, 1976) and W. Rivers, Finding Facts (Englewood Cliffs, N.J.: Prentice-Hall, 1975). No magazine or journal articles are listed for the three print courses. Assignments include stories of the students' choice, copy editing of manuscripts and manuscript work for publication.

A film course emphasizes technical film fundamentals, approaches and strategies of non-theatrical film use and organizational and economic aspects of non-theatrical films.

Through the Department of Journalism and Mass Communication at Kansas State University, Lowell Brandner offers a graduate level course on "Problems in Agricultural Publications," which emphasises writing for trade and popular agricultural publications and translating technical material. Two texts used in this course are M. O'Connors and F.P. Woodford's Writing Scientific Papers in English (NY: Excerpta Medica, 1976) and F.P. Woodford's Scientific Writing for Graduate Students (New York: Rockefeller University Press, 1968). Students are strongly recommended also to take courses in statistics and research methods.

Other types of science writing courses. Three courses offered by journalism departments do not fit the requirements for general science writing, technical, agricultural or environmental writing courses. All three are components of larger writing programs and seem designed to supplement the kinds of courses we have discussed previously.

Purdue University's "Communication in the Scientific Community," taught by L.E. Trachtman, concentrates on philosophical, political, normative and social behavior of scientists that affects communication among scientists as well as communication between science and the public. Tractman uses J. Ziman's Public Knowledge (London: Cambridge University Press, 1968) as a text and requires students to write short

analytical papers and complete a study of a particular communication problem within the scientific community.

Sharon Friedman offers a course on "The Politics of Science" as part of a large science-writing program at Lehigh University. With emphasis on political aspects of the scientific community, she assigns as texts Phil Boffey's Brain Bank of America, Dan Greenberg's The Politics of Pure Science, The Politics of American Science by J.L. Penick, et al, and Rae Goodell's The Visible Scientists. (see Appendix A for complete citations). Examinations constitute the major graded assignments for this course.

As part of its program in technical journalism, Oregon State University's Department of Journalism offers a course in "Industrial Advertising" that examines the role of such advertising in newspapers and magazines with special emphasis on industrial, technical and scientific publications. Instructor Ronald Lovell uses R.P. Nelson's The Design of Advertising (New York: Wm. C. Brown Company, 1973) as required reading, and students must design an ad campaign for an industrial product aimed at least in part at mass media outlets.

Conclusions. Examination of the general science writing course syllabi reveal a wide range of course objectives and a varied use of resource material. The emphasis is necessarily on writing skills, although in a number of general science writing courses, instructors are emphasizing such things as

sociological, philosophical and political aspects of science as well. The extreme variety of books used either speaks to the wealth of materials available or to the lack of any one book geared specifically to the science-writing classroom. Burkett's book was designed to be a science-writing text but is utilized by relatively few instructors.

Use of available science communication research is minimal. It is disheartening to see this since most of the research is soundly done and has some substantive things to say about writing science for lay audiences.

Lastly, as we analyzed the syllabi it be[illegible]ident that many were incomplete. Information available [illegible]labi varied greatly and was often minimal: descriptions c[illegible]rse objectives were fuzzy, text citations were incomplete, etc. [illegible]lthough the student in the classroom would probably find the information sufficient with instructor supplementation, such superficiality certainly hurts the use of syllabi as data bases.

FOOTNOTES

[1]This study was conducted by the 1977-1978 Teaching Committee of the Association for Education in Journalism's Theory & Methodology Division. Committee members are Ellen Wartella (Ohio State), chair, Sharon Dunwoody (Ohio State), Sharon Friedman (Lehigh) and Rita Atwood (University of Washington).

[2]Sharon M. Friedman, Rae Goodell and Lawrence Verbit, Directory of Science Communication Courses and Programs (Binghamtom, NY: Department of Chemistry, State University of New York at Binghamton, 1978).

[3]The authors would like to acknowledge the assistance of Patricia Hartsel, graduate research assistant in the Department of Communication, Ohio State University, who coded much of the data.

APPENDIX A

General Science Writing Course Required and Recommend Books

1. Required
2. Recommended

[1]Agnew, Neil, and Pyke, Sandra. The Science Game: An Introduction to Research in the Behavioral Science. Englewood Cliffs, N.J.: Prentice-Hall, 1969.

[2]Arny, Mary Travis, and Reaske, Christopher R. Ecology: A Writer's Handbook. New York: Random House, 1972.

[2]Asimov, Isaac. The New Intelligent Man's Guide to Science. New York: Basic Books, 1965.

[1]Bernstein, Jeremy. A Comprehensible World: On Modern Science and Its Origins. New York: Random House, 1967.

[2]Bishop, Jerry. I Think I'm Having a Heart Attack. Princeton, N.J.: Dow Jones Books, 1974.

[2]Boffey, Phillip. The Brain Bank of America: An Inquiry into the Politics of Science. New York: McGraw-Hill, 1975.

[2]Boorstin, Daniel. The Americans: The Democratic Experience. New York: Random House, 1973.

[2]Bordley, James III, and Harvey, A. McGehee. Two Centuries of American Medicine, 1776-1976. Philadelphia: Saunders, 1976.

[2]Bowers, John Z., and Purcell, Elizabeth, eds. Advances in American Medicine: Essays at the Bicentennial. New York: Josiah Macy Foundation, 1976.

[1]Bowes, John, and Stamm, Keith. Communication of Technical Information to Lay Audiences, 1978.

[2]Bronowski, Jacob. The Ascent of Man. Boston: Little, Brown, 1973.

[1,2]Bronowski, Jacob. The Common Sense of Science. Cambridge: Harvard University Press, 1966.

[1]Bronowski, Jacob. Science and Human Values. Revised edition. New York: Harper and Row, 1965.

[1,2]Burkett, Warren. Writing Science News for the Mass Media. 2nd edition. Houston: Gulf Publishing Company, 1973.

[2]Commoner, Barry. Science and Survival. New York: Viking Press, 1964.

[2]Dupree, A. Hunter. Science in the Federal Government: A History of Policies and Activities to 1940. Cambridge, Mass.: Harvard University Press, 1957.

[2]Ebben, S., and Kasper, R., Citizen Groups and the Nuclear Power Controversy. Cambridge, Mass.: MIT Press, 1974.

[2]Eiseley, Loren. The Immense Journey. New York: Random House, 1957.

[2]Flesch, Rudolf. The Art of Readable Writing: With the Flesch Readability Formula. Revised. New York: Harper and Row, 1974.

[2]Foster, J. Science Writer's Guide. New York: Columbia University Press

[1,2]Goodell, Rae. The Visible Scientists. Boston: Little, Brown and Company, 1977.

[2]Goodfield, June. Playing God: Genetic Engineering and the Manipulation of Life. New York: Random House, 1977.

[2]Gould, Stephen. Ever Since Darwin: Reflections in Natural History. New York: Norton, 1977.

[1,2]Greenberg, Daniel S. The Politics of Pure Science. New York: New American Library, 1967.

[2]Hagstrom, Warren O. The Scientific Community. Carbondale: Southern Illinois University Press, 1965.

[1]Hall, Donald. Writing Well. 2nd ed. Boston: Little, Brown, 1976.

[2]Hendin, David. The World Almanac Whole Health Guide New York: New American Library, 1977.

[2]Hicks, Tyler G. Writing for Engineering and Science. New York: McGraw-Hill, 1961.

[1]Hough, George A. News Writing. Boston: Houghton Mifflin Company, 1975.

[2]Kezdi, Paul. You & Your Heart. New York: Atheneum, 1977.

[1,2]Krieghbaum, Hillier. Science and the Mass Media. New York: New York University Press, 1967.

[1,2]Kuhn, Thomas. The Structure of Scientific Revolutions. 2nd edition. Chicago: The University of Chicago Press, 1970.

[2]Leakey, Richard, and Lewin, Roger. Origins. New York: Dutton, 1977.

[1]McPhee, John. The John McPhee Reader. Edited by Howarth, William. New York: Farrar, Straus and Giroux, 1976.

[1]Menzel, Donald H., Jones, Howard, M. and Boyd, Lyle G. Writing A Technical Paper. New York: McGraw-Hill, 1961.

[1,2]Metzger, Norman. Science in the Newspaper. Washington, D.C.: AAAS, 1974.

[1,2]Metzger, Norman. Science on Television. Washington, D.C.: AAAS, 1975.

[2]Mumford, Lewis. The Pentagon of Power. Vol. 2 of The Myth of the Machine. New York: Harcourt, Brace & World, 1967-1970.

[1]Neal, James W., and Brown, Suzanne S. Newswriting and Reporting. Ames, Iowa: Iowa State Press, 1976.

[1]Penick, James L. Jr., Pursell, Carroll W. Jr., Sherwood, Morgan B., and Swain, Donald C., eds. The Politics of American Science. Cambridge, Mass.: The MIT Press, 1972.

[1]Primack, Joel, and von Hippel, Frank. Advice and Dissent: Scientists in the Political Arena. New York: Basic Books, Inc., 1974.

[2]Reddick, DeWitt. Literary Style in Science Writing. New York: Magazine Publishers Association, 1969.

[1]Rivers, William L. Finding Facts. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1975.

[1]Rivers, William L. Writing: Craft and Art. Englewood Cliffs, N.J.: Prentice-Hall, 1975.

[1,2]Roueche, Berton. Eleven Blue Men and Other Narratives of Medical Detection. Boston: Little, Brown, 1953.

[2]Roueche, Berton. The Incurable Wound and Further Narratives of Medical Detection. Boston: Little, Brown, 1957.

[2]Rogers, Michael. Biohazard. New York: Alfred A. Knopf, 1977.

[2]Strickland, S.P. Politics, Science and Dread Disease. Cambridge, Mass.: Harvard University Press, 1972.

[1,2]Strunk, William Jr., and White, E.B. The Elements of Style. 2nd ed. New York: The Macmillan Company, 1972,

[1]Suppe, Frederick, ed. The Structure of Scientific Theory. 3rd ed. Urbana: University of Illinois Press, 1974.

[1]Thomas, Lewis. The Lives of a Cell. New York: Bantam Books, Inc., 1973.

[1]Udall, Stewart. The Quiet Crisis. New York: Holt, Rinehart and Winston, 1963.

[2]Wade, Nicholas. The Ultimate Experiment: Man-Made Evolution. New York: Walker, 1977.

[1]Watson, James. The Double Helix. New York: New American Library, 1968.

[2]Weinberg, A.M. Reflections on Big Science. Cambridge, Mass.: MIT Press, 1967.

[1,2]Weisman, Herman M. Basic Technical Writing. 3rd ed. Columbus, Ohio: Charles E. Merrill Publishing Company, 1974.

[2]Witford, R.H. Physics Literature. Metuchen, N.J.: Scarecrow Press, 1968.

[1]Zinsser, William K. On Writing Well. New York: Harper and Row, 1976.

General Science Writing Course Magazine
Sources of Required Readings

Bulletin of the Atomic Scientists
Chemical and Engineering News
Columbia Journalism Review
Daedalus
Harvard Magazine
Horticulture
Nature
New England Journal of Medicine
New Scientist
Newsletter on Science, Technology, and Human Values
Newsweek
The New Yorker
Popular Science
Psychology Today
Quill
Reader's Digest
Rolling Stone
Science Digest
Science & Government Report
Science for the People
Scientific American
Smithsonian
Technology Review
Writer's Digest

APPENDIX C

General Science Writing Course Assigned Journal Articles

Cole, Bruce. "Trends in Science and Conflict Coverage in Four Metropolitan Newspapers." Journalism Quarterly 52:465-471, 1975.

Etzioni, Amitai, and Nunn, Claude. "The Public Appreciation of Science in Contemporary America." Daedalus 103:191-205, Summer 1974.

Funkhouser, G.R., and Maccoby, N. "Tailoring Science Writing to the General Audience." Journalism Quarterly 50:220-226, 1973.

Krugman, Herbert E. "Public Attitudes toward the Apollo Space Program, 1965-1975." Journal of Communication, 27:87-93, Autumn 1977.

Ryan, Michael, and Dunwoody, Sharon. "Academic and Professional Training Patterns of Science Writers." Journalism Quarterly 52:239-246, 290, 1975.

Tankard, James, and Ryan, Michael. "News Source Perceptions of Accuracy of Science Coverage." Journalism Quarterly 51:219-225, 1974.

Tichenor, Phil, Olien, C.N., Harrison, A., and Donohue, G. "Mass Communication Systems and Communication Accuracy in Science News Reporting." Journalism Quarterly 47:673-683, 1970.